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APR 25 2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Srinath Hosur et al.
Serial No: 09/813,532
Filed: 3/21/2001
Art Unit: 2634
Examiner: S. Pathak
Docket No.: TI-30812
Conf. No.: 3579
Customer No.: 23494

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FACSIMILE COVER SHEET

<input checked="" type="checkbox"/> FACSIMILE COVER SHEET (1 SHEET)	<input type="checkbox"/> AMENDMENT
<input type="checkbox"/> NEW APPLICATION	<input type="checkbox"/> EOT
<input type="checkbox"/> DECLARATION	<input type="checkbox"/> NOTICE OF APPEAL
<input type="checkbox"/> ASSIGNMENT	<input checked="" type="checkbox"/> APPEAL BRIEF (6 Pages)
<input type="checkbox"/> FORMAL DRAWINGS	<input type="checkbox"/> ISSUE FEE
<input type="checkbox"/> INFORMAL DRAWINGS	<input type="checkbox"/> REPLY BRIEF (IN TRIPLICATE)
<input type="checkbox"/> CONTINUATION APP'N	
<input type="checkbox"/> DIVISIONAL APP'N	
NAME OF INVENTOR(S): Srinath Hosur et al.	
TITLE OF INVENTION: Wireless Communication	
TI FILE NO.: TI-30812	DEPOSIT ACCT. NO.: 20-0668
FAXED: 04/25/2005 DUE: 04/24/2005 ATTY/SEC'Y: CHH/gs	
RECEIPT DATE & SERIAL NO.: Serial No.: 09/813,532 Filing Date: 3/21/2001 Conf. No.: 3579	

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APR 25 2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appl.No.: 09/813,532
Appellant: Hosur
Filed: March 21, 2001
TC/AU: 2634
Examiner: Pathak

Confirmation No.: 3579

Docket: TI-30812
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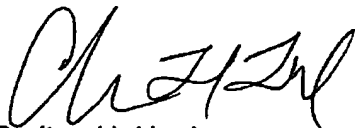
APPELLANT'S BRIEF

Commissioner for Patents
P.O.Box 1450
Alexandria VA 22313-1450

Sir:

The attached sheets contain the Rule 41.37 items of appellants' brief. The Commissioner is hereby authorized to charge the fee for filing a brief in support of the appeal plus any other necessary fees to the deposit account of Texas Instruments Incorporated, account No. 20-0668. A fee transmittal sheet is enclosed.

Respectfully submitted,



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Rule 41.37(c)(1)(i) Real party of interest

Texas Instruments Incorporated owns the application.

Rule 41.37(c)(1)(ii) Related appeals and interferences

There are no related dispositive appeals or interferences.

Rule 41.37(c)(1)(iii) Status of claims

Claims 1-12 are pending in the application with all claims finally rejected. This appeal involves the finally rejected claims.

Rule 41.37(c)(1)(iv) Status of amendments

There is no amendment after final rejection.

Rule 41.37(c)(1)(v) Summary of claimed subject matter

The invention provides a methods of wireless communication with transmission from a first antenna of a set ("burst") of N symbols on N subcarriers (e.g., orthogonal frequency division multiplexing, OFDM, with N = 64, 128, 256, ...) and transmission from a second antenna of a set of N transformations of the same set of symbols on the same N subcarriers. The use of a second antenna with a transformed set of symbols provides for antenna diversity. Figure 1 shows the two antenna case with the block "two channels IFFT" including conversion from N subcarriers to a time domain signal for each of the two channels; the prior block "serial-to-parallel: burst plus transform burst" puts the N symbols on N subcarriers and the N transformed symbols on N subcarriers. Figures 2-13 heuristically illustrate N subcarriers with various symbol transformations. Application pages 3-4 describe the two antenna transmission. Application pages 7-8 note the 4 antenna case.

Rule 41.37(c)(1)(vi) Grounds of rejection to be reviewed on appeal

The grounds of rejection to be reviewed on appeal are:

(1) whether claims 1 and 7 are patentable over the Lee reference in view of the Dabak reference.

(2) whether claims 2-6 and 8-12 are patentable over the Lee reference in view of the Dabak and Vasic references.

Rule 41.37(c)(1)(vii) Arguments

(1) Claims 1 and 7 were rejected as unpatentable over Lee in view of Dabak. The Examiner cited Lee for OFDM and Dabak for STTD with spread spectrum and assertions a combination.

Appellant replies that there is no suggestion to combine the OFDM (orthogonal frequency division multiplexing) of Lee with the STTD (space-time transmission diversity) of Dabak. Indeed, Lee focuses on multiple receiver antennas with a single antenna transmission; see page 1105, left column, equation (10) and discussion. In contrast, Dabak shows single antenna reception with two-antenna transmission (Figs. 1-2). Thus, there is no combination suggestion.

(2) Claims 2-6 and 8-12 were rejected as unpatentable over Lee in view of Dabak and Vasic. The Examiner added Vasic for data plus pilot transmissions.

Appellant relies on the patentability of the independent claims 1 and 7.

Rule 41.37(c)(1)(viii) Claims appendix

1. A method of transmission, comprising:
 - (a) providing a set of N symbols where N is an integer greater than 1;
 - (b) providing $M-1$ transformations of said set of N symbols where M is an integer greater than 1;
 - (c) transmitting said set of N symbols on N subcarriers in a burst from a first antenna; and
 - (d) transmitting each of said $M-1$ transformations of set of N symbols on N subcarriers in a burst from a corresponding one of $M-1$ antennas.
2. The method of claim 1, wherein:
 - (a) said set of N symbols includes pilot symbols and data symbols.
3. The method of claim 2, wherein:
 - (a) M equals 2; and
 - (b) said $M-1$ transformations includes a pairwise rotation and complex conjugation of two of said set of N symbols.
4. The method of claim 3, wherein:
 - (a) said symbols are QAM symbols.
5. The method of claim 2, wherein:
 - (a) N equals 64; and
 - (b) 48 of said N symbols are data symbols.
6. The method of claim 4, wherein:
 - (a) said set of N symbols is partitioned into $N/2$ pairs of symbols (a_i, b_i) ; and
 - (b) said $M-1$ transformation transforms the pairs (a_i, b_i) into the pairs $(-b_i^*, a_i^*)$.

7. A method of transmission, comprising:

(a) providing first and second sets of N symbols where N is an integer greater than 1;

(b) providing $M-1$ transformations of said first set of N symbols and said second set of N symbols where M is an integer greater than 1;

(c) transmitting said first and second sets of N symbols on N subcarriers in a first and a second burst from a first antenna; and

(d) transmitting each of said $M-1$ transformations of set of N symbols on N subcarriers in a pair of bursts from a corresponding one of $M-1$ antennas.

8. The method of claim 7, wherein:

(a) said set of N symbols includes pilot symbols and data symbols.

9. The method of claim 8, wherein:

(a) M equals 2; and

(b) said $M-1$ transformations includes a pairwise rotation and complex conjugation of two of said set of N symbols.

10. The method of claim 9, wherein:

(a) said symbols are QAM symbols.

11. The method of claim 8, wherein:

(a) N equals 64; and

(b) 48 of said N symbols are data symbols.

12. The method of claim 10, wherein:

(a) said set of N symbols is partitioned into $N/2$ pairs of symbols (a_i, b_i) ; and

(b) said $M-1$ transformation transforms the pairs (a_i, b_i) into the pairs $(-b_i^*, a_i^*)$.

Rule 41.37(c)(1)(ix) Evidence appendix

n/a

Rule 41.37(c)(1)(x) Related proceedings appendix

n/a